



How to Teach Procedural Skills

Kim Strupp, MD, Debnath Chatterjee, MD, FAAP, University of Colorado

- Procedural skills are defined as mental and motor activities required to execute a manual task.¹
- Technical skills are only one aspect of procedures; the others include clinical judgment, communication, and teamwork.¹
- “See one, do one, teach one” is not the best way to teach the complex technical procedures needed in many hospital-based specialties.^{2,3}
- McLeod et al. have proposed a more structured approach to teaching procedures.³ (Table 1)
- Teachers should adapt their behavior to the learner’s needs.
 - Demonstrate clinical excellence.
 - Actively engage learners.
 - Have a positive attitude.
 - Be a role model for professionalism.
 - Demonstrate concern for the learner.
- Provide feedback:^{3,4}
 - Make it regular, expected, and honest, based on first-hand observations.
 - Be specific and descriptive.
 - Ensure feedback is nonjudgmental and performance-based—use open-ended questions to discuss actions and behaviors, not personalities or attitudes.
- Challenges specific to the OR environment⁴
 - Physical environment and the emotional impact of the surgical procedure.
 - Complexity of the educational task.
 - Struggle of managing the relationships between all the team members in the OR.

Table 1: Seven Principles for Teaching Procedural and Technical Skills. Adapted from McCleod et al.³

Plan ahead	<ul style="list-style-type: none"> • Review learning objectives. • Assess learner’s needs. • Ensure that the learner has acquired the basic knowledge
Demonstrate the procedure	<ul style="list-style-type: none"> • Make explicit commentary during the demonstration. • Break down the procedure into key steps. • Allow for questions or interruptions.
Observe the learner in action and allow for practice	<ul style="list-style-type: none"> • Ask the learner to verbalize what he/she is doing. • Elicit self-assessment and reflection.
Provide feedback	<ul style="list-style-type: none"> • Be specific and descriptive. • Ensure feedback is nonjudgmental and performance based. • Focus on behaviors, not personality.
Encourage learners’ self-assessment	<ul style="list-style-type: none"> • Assess skill level. • Identify areas for improvement.
Allow for practice under less-than-ideal conditions	<ul style="list-style-type: none"> • Ensure varying degrees of complexity, such as challenging anatomy.
Prepare to modify approach	<ul style="list-style-type: none"> • Learner who shows up unprepared. • Unfamiliar learning site. • “Opportunistic” learning and teaching.

References:

1. Sawyer T, White M, et al. Learn, See, Practice, Do, Maintain: An Evidence-Based Pedagogical Framework for Procedural Skill Training in Medicine. *Acad Med.* 2015;90(8):1025-1033.
2. Grantcharov TP, Reznick RK. Teaching Procedural Skills. *BMJ Brit Med J.* 2008; 336:1129-31.
3. McLeod PJ, Steinert Y, Trudel J, Gottesman R. Seven Principles for Teaching Procedural and Technical Skills. *Acad Med.* 2001;76(10):1080.
4. Viola L, Young DA. How to Teach Anesthesia in the Operating Room. *Int Anesthesiol Clin.* 2016;54(3):18-34.